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The Line

①  $y = mx + b$  - slope yint form

②  $Ax + Bx + C = 0$  - Standard form

③  $ax + by = c$  = Two Variable format

Combo

$0.02x + 0.05y = 50$

$10.20x + 15y = 4600$

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Grade 10

Pt of Intersection  
b/w Two Lines

Substitution      Elimination

$y = 3x + 20$        $2x + 3y = 60$   
 $y = 4x - 10$        $2x - 6y = 20$

$y_1 = y_2$

$3x + 20 = 4x - 10$

$20 = 4x - 3x - 10$

$20 = x - 10$

$20 + 10 = x$

$30 = x$

$y = 3x + 20$   
 $y = 3(30) + 20$   
 $y = 90 + 20$   
 $y = 110$

Pt of Int  $(x, y)$   
 $(30, 110)$

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Elimination

$2x + 3y = 60$  ①  
 $- 2x - 6y = 20$  ②

$9y = 40$

$y = 40/9$

$(1, 40/9)$

$2x + 3y = 60$   
 $2x + 3(40/9) = 60$   
 $2x + 120/9 = 60$   
 $2x + 40/3 = 60$   
 $2x = 60 - 40/3$   
 $2x = 180/3 - 40/3$   
 $2x = 140/3$   
 $x = 140/6$

$x = 140/6$        $y = 40/9$

$(140/6, 40/9)$

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Quadratics

① Standard Form  
 $Ax^2 + Bx + C = 0$       Roots  
    specific points

② Vertex Form  
 $y = a(x-h)^2 + k$        $(h, k)$   
    vertex

③ Factored Form  
 $y = a(x-s)(x-r)$       max height  
    profit

$s$  and  $r$       ball hits the ground  
 - zeros      break even

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